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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI
OFFICE DES EAUX DU NUNAVUT

File No.: **3BM-KUG1520**

December 8, 2015

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RE: 3BM-KUG1520NWB Renewal – Amendment Licence – Kitikmeot Region

Dear Mr. LeBlanc and Mr. Alam:

Please, find attached Licence No. **3BM-KUG1520** issued to the Hamlet of Kugluktuk (Licensee) by the Nunavut Water Board (NWB) pursuant to its authority under Article 13 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada (Nunavut Land Claims Agreement or NLCA)*. The terms and conditions of the attached Licence related to the use of Water and the deposit of Waste are an integral part of this approval.

If the Licensee contemplates the renewal of this Licence, it is the responsibility of the Licensee to apply to the NWB for its renewal. The past performance of the Licensee, new documentation and information, and issues raised during a public hearing, if the NWB is required to hold one, will be used to determine the terms and conditions of the Licence renewal. Note that if the Licence expires before the NWB issues a new one, then the use of Water and the deposit of Waste must cease, or the Licensee may be in contravention of the *Nunavut Land Claims Agreement* and the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*. However, the expiry or cancellation of a licence does not relieve the holder from any obligations imposed by the licence. The NWB recommends that an application for the renewal of this Licence be filed at least three (3) months prior to the Licence expiry date.

If the Licensee contemplates or requires an amendment to this licence, the NWB may decide, in the public's interest, to hold a public hearing. The Licensee should submit applications for amendment as soon as possible to give the NWB sufficient time to go through the amendment process. The process and timing may vary depending on the scope of the amendment; however, a minimum of sixty (60) days is required from time of acceptance by the NWB. It is the responsibility of the Licensee to ensure that all application materials have been received and are

acknowledged by the Manager of Licensing.

The NWB strongly recommends that the Licensee consult the comments received from interested parties and the issues of compliance identified by the NWB. This information is attached for your consideration¹.

Sincerely,

Thomas Kabloona
Nunavut Water Board
Chair

TK/SA/pb

Enclosure: Licence No. **3BM-KUG1520**
Comments – AANDC

Cc: Kitikmeot Distribution List

¹ Aboriginal Affairs and Northern Development Canada (AANDC), March 2, 2015.

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DECISION

LICENCE NUMBER: 3BM-KUG1520

This is the decision of the Nunavut Water Board (NWB) with respect to a complete application dated March 17, 2014 for an amendment and renewal of a Water licence made by the:

HAMLET OF KUGLUKTUK

to allow for the use of Water and deposit of Waste during municipal activities by the Hamlet of Kugluktuk, located within the Kitikmeot Region, Nunavut, at the following general geographical coordinates:

Latitude: 67° 49' 32" N and Longitude: 115° 05' 42" W

DECISION

After having been satisfied that the Application was for a location that falls outside of an area with an approved Land Use Plan¹ and exempt from the requirement for screening as described within Schedule 12-1 by the Nunavut Impact Review Board² in accordance with Article 12 of the *Nunavut Land Claim Agreement (NLCA)*, the NWB decided that the application could proceed through the regulatory process. In accordance with s.55.1 of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act (Act)* and Article 13 of the *NLCA*, public notice of the application was given and interested persons were invited to make representations to the NWB.

After reviewing the submission of the Applicant and considering the representations made by interested persons, the NWB, having given due regard to the facts and circumstances, the merits of the submissions made to it and to the purpose, scope and intent of the *NLCA* and of the *Act*, waived the requirement to hold a public hearing and determined that:

Licence No. 3BM-KUG0914 be renewed as Licence No. 3BM-KUG1520 subject to the terms and conditions contained therein (Motion # 2015-B1-040:).

Signed this 8th day of December, 2015 at Gjoa Haven, NU.

Thomas Kabloona
Nunavut Water Board
Chair

TK/SA/pb

¹Nunavut Planning Commission Determined No Land Use Conformity Determination Required, May 27, 2015

²Nunavut Impact Review Board, Screening Exemption Decision, February 26, 2015.

I. BACKGROUND

The Hamlet of Kugluktuk is located at the mouth of the Coppermine River, on Coronation Gulf, southwest of Victoria Island in the Kitikmeot Region of Nunavut. Located at 67° 49' 32" N latitude and 115° 05' 42" W longitude, it is the westernmost community in Nunavut, near the border with the Northwest Territories.

The Hamlet operates Water Supply and Waste Management Facilities for which a water licence from the Nunavut Water Board is required. Community infrastructure includes:

- Water Supply Facility (WSF) which draws freshwater from the Coppermine River. The WSF consists of a Water Intake System (WIS) and a Water Treatment Plant (WTP). The water is pumped from the river and then carried by pipes to the WTP. In 2012, the Hamlet initiated and completed modifications to the Water Intake System installing a new intake pump house and intake lines which are currently in operation. Now, the focus of the modifications is directed to the upgrade of the WTP. The construction of the new WTP is expected to start in 2015 and to be completed by early 2016.
- The Wastewater Treatment Facilities or Sewage Disposal Facilities (SDF) consist of a sewage lagoon and associated wetland. The raw sewage is transported by trucks to the SDF, where primary treatment takes place in an engineered, fully lined, lagoon. The operating lagoon is located approximately 4 km southwest of the Community. Effluent entering the Sewage Lagoon is off-loaded at the southeast corner of the lagoon and undergoes settling and decomposition. Next, the Effluent is redirected east by an exfiltration berm to the wetland area. After flowing through the wetland area, the effluent is finally discharged into the Coronation Gulf.
- Domestic solid waste is directed to the Waste Disposal Facility. The Solid Waste Disposal Facility (SWDF) consists of a Landfill, a Bulky Metal Area and a Hazardous Waste Storage Area. The SWDF also includes a Landfarm Facility which is located at the southeast corner of the Landfill.

II. FILE HISTORY

On **July 1, 1988**, the Northwest Territories Water Board issued a Water Licence Type "B" to the Hamlet of Coppermine (now Kugluktuk) for the use of 70,000 m³ of Water *per* year and the deposit of Waste. The Licence expired on June 30, 2003.

On **November 20, 2003** the Nunavut Water Board (the Board or NWB) issued Licence NWB3KUG0308 to the Hamlet of Kugluktuk for the use of 64,000 m³ of Water *per* year and the deposit of Waste generated by the Hamlet. The Licence expired on November 30, 2008.

On **August 12, 2007** the NWB issued amendment No.1 to Licence NWB3KUG0308 to allow for the rehabilitation of and upgrades to the Sewage Disposal Facility and Solid Waste Disposal Facility.

On **May 14, 2009** the NWB issued Licence 3BM-KUG0914 to the Hamlet of Kugluktuk for the use of 77,105 m³ of Water *per* year and the deposit of Waste generated by the Hamlet. The Licence expired on April 30, 2014.

III. PROCEDURAL HISTORY OF RENEWAL – AMENDMENT APPLICATION

The initial set of documents for the application to renew and amend the Licence (the Application) was submitted to the NWB by the Hamlet of Kugluktuk on **March 19, 2014**. The Application consisted of:

- Cover letter;
- Executive Summary in English and Inuktitut;
- Community background summary;
- Description of undertaking;
- NWB Renewal / Amendment Application Form;
- Proof of fee payment;
- A set of drawings entitled: “*Water Supply Improvements Phase 1, New Intake and Pumphouse*”;
- A Report entitled: “*Design Development Report : Phase 1- Intake and Pumphouse Replacement, Project: Water System Improvement*”, prepared by A. D. Williams Engineering Inc., dated December 2008;
- A Report entitled: “*Process Selection Report Project: Phase 2 – Water Treatment*”, Prepared by Williams Engineering Canada Inc., dated September 2011.

On **May 9, 2014**, Hamlet submitted the document entitled:

- “*Sewage Treatment Facility Operation and Maintenance Plan*”, dated May 2014.

On **August 27, 2014**⁴, following a preliminary technical review of the Application, the NWB notified the Hamlet of a number of deficiencies in the Application, and requested the Licensee to address them in order to proceed with the Licensing process.

Addressing the issues as requested by NWB, the Licensee submitted the following documents:

On **October 24, 2014**:

- A set of drawings entitled “*Water Supply Improvements Phase 1 New Intake and Pumphouse*” produced by Williams Engineering, dated 9 October 2014 (record drawings);

On **October 31, 2014**:

- A set of drawings entitled “*Water Supply Improvements Phase 2 Water Treatment Plant*”,

⁴ Letter to D. LeBlanc and S. Alan, from NWB; Re: Water Licence 3BM-KUG0914, Application for Renewal and Amendment, dated August 27 2014.

produced by Williams Engineering, dated June 30, 2014 (issued for construction);

- A set of drawings entitled “*Water Supply Improvements Phase 2 Water Treatment Plant*” produced by Williams Engineering, dated March 5, 2014 (issued for tender);
- A document entitled “*Abandonment and Reclamation Plan for the Old Sewage Lagoon*”, prepared by Nuna Burnside Engineering and Environmental Ltd., dated May 2013; and
- A document entitled “*Kugluktuk Water Intake Organization and Maintenance Manual*” prepared by Williams Engineering Canada Inc., dated October 2014.

On November 28, 2014:

- A document entitled “*Spill Contingency Plan*”, dated November 28, 2014;
- A document entitled “*Plan for Compliance*”.

On **February 2, 2015**, after an internal review and having determined that the Application’s submissions addressed the relevant deficiencies satisfactorily, the NWB provided notice of the Application and invited parties to start the technical review of the Application and make representations within thirty (30) days from the date of the invitation letter.

Also on this date, in accordance with s.11.5.10 of *the Nunavut land Claims Agreement* (“NLCA”), the NWB sent the Project proposal to the Nunavut Planning Commission, to determine whether the Project proposal is in conformity with an approved land use plan. Moreover, pursuant to s. 13.5.1 of the NLCA, the NWB requested that the Nunavut Impact Review Board (NIRB) determine whether the project requires environmental screening.

On February 26, 2015 NIRB informed the Applicant and the NWB that the Project is exempt from screening. On May 27, 2015 NPC confirmed by email that the Project Proposal falls outside of the two approved land use plans; therefore, a NPC conformity determination is not required.

On March 2 2015, comments were received from Aboriginal Affairs and Northern Development Canada (AANDC).

Copies of the submission received as well as all documents related to this Application can be accessed through the NWB’s ftp site using the following link:

<ftp://ftp.nwb-oen.ca/1%20PRUC%20PUBLIC%20REGISTRY/3%20MUNICIPAL/3B/3BM%20-%20Municipality/3BM-KUG0914/1%20APPLICATION/>

Based on the results of the completed detailed assessment, including consideration of any cumulative environmental effects that the overall project might have in the area, the Board has approved the application for the renewal and amendment of Licence No. **3BM-KUG0914** as Licence No. **3BM-KUG1520**.

IV. ISSUES

Compliance

In confirming the Licensee's state of compliance with respect to terms and conditions of the Water Licence, the Board considers a number of factors, including AANDC's site Inspection Reports and the Licensee's submissions to the Board of plans and Annual Reports in accordance with the Licence conditions.

The 2014 AANDC's Inspection Report (IR) summarizes some of the Licensee's Non-Compliance (NC) with the Act or Licence conditions. These were identified as:

- Unsatisfactory protection of the Water source;
- Annual Reports have not been submitted or the submitted Annual Reports are incomplete;
- Inconsistent solid waste management practices at the Solid Waste Facility;
- Failure to implement Operational Plans as approved by the Board;
- Sediment and erosion control issues at the Sewage Disposal Facilities; and
- Unauthorized discharge of sewage effluent.

The NWB is aware of the frequent non-compliance issues with respect to the expired Licence terms and conditions. For instance, under Part F Item 1 of the expired Water Licence, the Licensee is required to submit to the Board within ninety (90) days of Licence issuance, an updated consolidated O&M Manual for the licensed facilities and until now, the updated Manual has not been submitted. The Solid Waste Facility is lacking an updated O&M Manual; the manual currently in use for the Solid Waste Facility had been issued in March 2007. Likewise, the QA/QC Plan required under Part H, Item 9 of the expired Water Licence was never submitted. And finally, some modifications to the Water Supply Facility have been implemented without the Board's knowledge or authorization.

The Hamlet appears, however, to have made efforts to address some the non-compliance issues; these include:

- Annual Reports have been submitted, yet some of them are incomplete;
- A foreman has been appointed⁵ to supervise the operations of the Solid Waste and Sewage Facilities, and separate locations for barrels and batteries have been established at the Solid Waste Facility;
- Earth work filling and maintenance work were carried out in the Sewage Disposal Facilities during 2014⁶ to solve the sediment and erosion issues; and
- The Water Intake Facility Operations & Maintenance Plan, and the Sewage Treatment Facilities Operations & Maintenance Plan have been submitted with the Application as well as the Facilities Spill Contingency Plan.

5 & 6 : 2014 Hamlet Annual Report

Also, in order to address the Non-Compliance issues, the Licensee has submitted with the Application an updated Plan for Compliance; the Plan provides objectives and associated timelines to solve many of the issues.

Term of the Licence

The Licensee has requested a five (5) year term for the renewal licence. In accordance with s. 45 of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (NWNSTRA or the Act), the NWB may issue a licence for a term not exceeding twenty-five (25) years. In determining an appropriate term of a Water licence, the Board considers a number of factors, including the results of the AANDC annual site inspections, the compliance history of the Applicant and comments provided by interested parties during the review process.

In recognition of the recent efforts made by the Licensee to address compliance issues and taking into consideration the Licensee's request, and intervener's (AANDC) recommendations, the NWB grants the licence for a term of five (5) years and believes that this time period will provide a realistic opportunity for the Licensee to prove to the Board that it can meet the long-term requirements of the Licence, allow for the commissioning of new and upgraded infrastructure as well as establish a consistent compliance record with respect to the requirements under the terms and conditions of the Water Licence. The five (5) year renewal Licence will also ensure that sufficient time is given to permit the Licensee to develop, submit, and implement the Plans required under the Licence to the satisfaction of the NWB.

Annual Report

Part B of the expired licence required the submission of annual reports including data of the Hamlet's Monitoring Program. The Board has received Annual Reports for years 2011-2014; however, the monitoring data in all of the reports was incomplete.

In accordance with s.14 of the *Nunavut Water Regulations*, the NWB maintains the condition under Part B, Item 1 of the current Licence, for the Licensee to produce and submit Annual Reports by March 31st every year. Annual Reports are an important assessment tool for the NWB regarding the state of compliance of the Licensee in addition to ensuring that the NWB and other stakeholders possess an accurate overview of Water use and Waste disposal activities during any particular calendar year. This information is maintained on the public registry and is available to interested parties upon request. A "*Standardized Form for Annual Reporting*", which may be supplemented by project specific information, should be used by the Licensee to file its reports. Access to the annual reports is made available on the NWB's ftp site at the following link:

[ftp://ftp.nwb-oen.ca/1%20PRUC%20PUBLIC%20REGISTRY/3%20MUNICIPAL/3B/3BM%20-%20Municipality/3BM-KUG0914/3%20TECH/1%20GENERAL%20\(B\)/2%20ANNUAL%20RPT/](ftp://ftp.nwb-oen.ca/1%20PRUC%20PUBLIC%20REGISTRY/3%20MUNICIPAL/3B/3BM%20-%20Municipality/3BM-KUG0914/3%20TECH/1%20GENERAL%20(B)/2%20ANNUAL%20RPT/)

Water Use

The Hamlet currently receives its freshwater supply from the Coppermine River for domestic use in a quantity not to exceed 77,000 cubic meters annually. The Licensee has not requested a change in the volume of Water use, and maintains the request of 77,000 m³ per year, as was granted by the previous Licence. The Board has therefore granted, under Part C, Item 2 of the Licence, an annual freshwater Water use of seventy-seven thousand (77,000) cubic meters, with an extraction rate not exceeding two hundred and ninety-nine (299) cubic metres per day.

Deposit of Waste

Sewage

The Hamlet of Kugluktuk deposits the sewage generated by and collected from the Community at a truck offload discharge area, located approximately 5 km from the Hamlet where the Effluent receives treatment through a newly built engineered retention Lagoon and a wetland before discharging into the Coronation Gulf.

During winter, sewage is collected and deposited into the lagoon for seasonal storage where, in the summer, it decants into the adjacent Wetland where it is subjected to biological treatment. The treated Effluent is discharged into the marine environment at Coronation Gulf.

The new Sewage Lagoon currently in operation, was commissioned in 2008. The lagoon is designed for an operational maximum capacity of approximately 126,000 m³, expected to be achieved twenty (20) years following commissioning. The lagoon will be desludged when the sludge level reaches approximately 0.3 m thickness, which is estimated to occur at approximately 5 to 10 year intervals. It is estimated that over the twenty year design life, desludging would be needed on two or three occasions.

In its 2014 AANDC's inspection report, the Inspector expressed concern over the operation and maintenance of the Sewage Treatment Facility. Some of the issues identified include:

- Gasses beneath the lagoon liner that pushed the liner to the surface of the lagoon, causing mixing of the lagoon contents and reducing the effective capacity of the lagoon;
- Evidence of Lagoon leakage;
- An overland flow is causing erosion to the lagoon south wall;
- A float which prevents the flowing of sewage sludge with the effluent was not in place.

According to the Hamlet's 2014's Annual Report, in summer of 2014 the Hamlet performed maintenance work on the lagoon in order to address these issues.

Solid Waste

The Hamlet of Kugluktuk's Solid Waste Disposal Facility (SWDF) is located approximately 3 km SW of the Community. The site covers an area of approximately 1.2 hectares. The Facility consists of four main components: a Landfill (also referred to as the Municipal Solid Waste

Disposal Area), the Bulky Materials Disposal Area, a Landfarm Facility and a Hazardous Waste Storage Area.

Regarding the SWDF, AANDC's 2014 Inspection Report draws attention to the following issues:

- Inconsistencies in the segregation of garbage;
- Entry of the landfill area is choked by garbage;
- Landfarm facility being used as a hazardous waste storage facility; and
- Uncontrolled runoff from the landfarm flows into the landfill.

Furthermore the Hamlet management practices at the time of the inspection were considered as inadequate with regard to the Solid Waste Facility.

Construction

In order to ensure that proper engineering practices will be in place through all phases of construction and operation of licenced facilities intended to contain, withhold, divert, or retain water or waste, the Board requires that design drawings, stamped by a qualified engineer, be submitted for the Board's review at least sixty (60) days prior to construction.

As-built drawings of the modified / built facilities are required to be submitted within ninety (90) days of completion of changes to the relevant structures. The as-built drawings should be accompanied by a final field report, prepared by the Engineer that identifies any deviations or changes from the planned design for future reference. Drawings are to be stamped by an Engineer and may be used by enforcement during inspections to verify that the facilities in place are built in accordance with accepted plans and drawings. General conditions related to Modifications and Construction are included under Part E, Items 2, 3, 4 and 5 of the renewal Licence.

The submitted amendment Application includes, under the scope, the upgrading of the Water Supply Facility (WSF). The upgrading is to be completed in two phases; Phase 1, already finalized, comprises the upgrade of the raw Water Intake System (WIS); Phase 2 relates to improvements to the Water Treatment Plant (WTP).

As informed in the Executive Summary of the Application, as well as reported in the Hamlet's 2013 Annual Report, the Hamlet has a newly constructed Water Intake System. This modification of the WSF was carried out without the Board's knowledge or authorization. The Board's letter to the Hamlet on August 27, 2014 states that this construction is neither within the scope of the Licence nor has the Board's authorization. Further to that, and in order to include the upgraded WIS under the scope of the new Water Licence, the Board requested the submission of the "as built drawings" of the newly constructed pump house and intake line of the WIS.

In response to the Board's letter, the Hamlet included with the Application, the document entitled: *"The Design Development Report: Phase 1- Intake and Pumphouse Replacement, Water System Improvement"* dated December 2008; along with the following record drawings: A-01,

C-01,C-02, C-03, C-04, EP-1, EP-2, EP-3, EP-4, EP-5, M-01, M-02, S-01, S-02 and S-03; the submitted drawings are neither signed nor stamped by an Engineer.

The objective of the WSF improvements is to provide the Community of Kugluktuk with a new stable, reliable and economic WSF. The new System is designed to handle the Community's Water supply needs until 2030.

Phase 1: Update of the Raw Water Intake System

The WIS upgrade comprises the construction of a new intake house and the installation of a twin pump system, with two independent pumps, in such a way that each one of the pumps can handle the full load of the system. The intake pumphouse will hold electrical services for the pumps, piping, valves, and compressor. A complete description of this system is included in the document entitled "*Design Development Report, Phase 1 – Intake and Pumphouse Replacement, Water System Improvement*" dated December 2008 and prepared by A. D. Williams Engineering Inc. (ADWE).

Phase 2: Upgrade of the Water Treatment Plant

The currently operating water treatment plant (WTP) includes a cartridge filtration system followed by disinfection. The Water storage capacity of this system is 358,000 L. As a consequence of high levels of turbidity observed in the Water during summer, the current WTP is unable to maintain Water turbidity levels below or equal to the standard value set in the Canadian Drinking Water Quality Guidelines (CDWQG). These turbidity issues are expected in some way to be solved with the use of a new WTP scheduled to be built during Phase 2 of the WSF Upgrade Project.

The recommended alternatives for upgrading the Water Treatment System are described in the document entitled "*Process Selection Report, Phase 2 Water Treatment*", dated September 2011 and prepared by Williams Engineering Canada Inc. According to the Report, the recommended option for the new Treatment Plant consists of an enhanced slow sand filtration with roughing filter. The roughing filter reduces the solids loading on the slow sand filter and prolongs the filter runtime between scrapings. In addition, as an additional aid in order to lower turbidity levels, a pretreatment system of coagulation/flocculation/sedimentation, will be operating during months in which water presents high turbidity. Tender drawings displaying the selected WTS have been submitted with the Application.

Under Part E, Items 5 and 6 of the Water Licence, the Board has included conditions requiring the submission at least sixty (60) days prior to the construction of the Issued For-Construction (IFC) drawings of the Water Treatment Plant and within ninety (90) days of completion of modifications As-built Drawings of the Water Supply Facility.

Operating Plans and Spill Contingency Measures

Under Part F, Item 1 of the expired Water Licence, the Licensee was required to submit to the Board, within ninety (90) days of issuance of the Licence, an updated consolidated Operations

and Maintenance (O&M) Manual, consisting of the previously submitted Plans: a) *Solid Waste Management Facility O & M Plan*, b) *Sewage Treatment Facility O&M Plan*, c) *Monitoring Program and Quality Assurance / Quality Control Plan* and d) *Environmental Emergency Contingency Plan*. The Manual was ever submitted; however, the Licensee has included with the Application some of the individual Plans. Therefore, and in order to facilitate the compliance with this condition the Board has amended the licence's condition to allow for individual plans that formed part of the manual to be submitted and approved separately.

The following Plans have been included with the Application:

- “*Kugluktuk, Nunavut, Spill Contingency Plan*”, dated November 2014.
- “*Water Intake Operation and Maintenance (O&M) Manual*”, dated October 2014; and
- “*Sewage Treatment Facility O & M Plan*”, dated May 2014;

The NWB has conducted reviews of each of the mentioned documents and consequently has approved under Part F, Item 2 the document entitled “*Kugluktuk, Nunavut, Spill Contingency Plan*”, November 2014. This document requires a minor amendment to be submitted as addendum with the Annual Report.

The review of the document entitled “*Sewage Treatment Facility (STF) O & M Plan*”, determined that the document presents out-of-date information and does not reflect the current Facility's operating and monitoring conditions. For instance, the Monitoring Program presented in Section 3.7 section entitled “*Sewage Treatment Facility Monitoring Program*” no longer applies⁷. Therefore, in order to reflect current monitoring and operating conditions the *STF O&M Plan* must be updated.

Furthermore, the currently in use “*Solid Waste Management Facility O & M Plan*” was issued in 2007, despite the fact that an updated edition of the Plan was required under the expired Licence, and has yet to be submitted.

Consequently, under Part F, Items 1 and 3 of the Licence the Board has included conditions requiring the Licensee, within ninety (90) days of issuance of the Renewal Licence, to submit for Board's approval in writing, an updated version of O&M Plans for the Sewage Treatment Facility and the Solid Waste Facility respectively.

Further, the new configuration of the Water Treatment Plant (WTP) will require an updated WTP O&M Plan, therefore, under Part F, Item 4 the Board requires the Licensee, within ninety (90) days of beginning operations of the New Water Treatment Plant to submit an updated Water Supply Facility's O&M Manual for Board's approval. The WSF Operation and Maintenance Manual should include an Operations and Maintenance Manual for the updated Water Treatment Facility and the “*Kugluktuk Water Intake Operations and Maintenance (O&M) Manual*” dated October 2014 and submitted as additional information with the Application.

⁷ Hamlet of Kugluktuk letter to the NWB dated April 6, 2015.

In addition to the above, under Part F, Item 5 the Board has included the requirement for annual inspections by an Engineer, of engineered facilities pertaining to Water and Waste management. The Board also requires under Part F, Item 6 of the licence that the Licensee conduct a geotechnical inspection of Water and Waste management facilities at least one (1) year prior to the anticipated renewal of the Licence. This is a standard requirement included in all recently issued municipal licences.

Abandonment and Reclamation Plan

In order to ensure that all abandoned facilities are reclaimed in an appropriate manner, the Board has included under Part G Item 2, the requirement to submit for approval in writing, an Abandonment and Reclamation Plan at least six (6) months prior to abandoning any Water and Waste management facilities, or upon submission of the final design drawings for the construction of new facilities to replace existing licenced facilities.

Under condition Part G, Item 2 of the expired Licence, the Licensee was required to submit for Board approval, within sixty (60) days following issuance of the Licence, an A&R Plan for the Old Sewage Disposal Facility. No A&R Plan was ever submitted during the term of the expired licence, however, and in order to fulfill this obligation a document entitled “*Old Sewage Lagoon Abandonment and Restoration Plan, Hamlet of Kugluktuk*” (A&R Plan) dated May 2013 authored by Nuna Burnside Engineering and Environmental Ltd was included with the Application.

The old lagoon, constructed in 2003, is located on the east side of the new lagoon and to the west of the new landfill. It has not been in use since the new lagoon was put in service in 2009. In September 2012, and in order to evaluate the current conditions of the Old Lagoon, a site assessment was conducted by Nuna Burnside Engineering and Environmental Ltd. The work included a visual inspection of the new and old lagoons, the berms and surrounding wetlands, as well as water and sludge sampling.

According to Section 4 of the above A&R Plan, the Old Lagoon will be drained by excavating trenches along the east berm of each cell and the water will flow out of the lagoons along the natural drainage channels. Sewage sludge will be taken to the Landfarm Facility to be remediated and the entire area of the lagoon will be graded to ensure drainage away from the new operational lagoon.

The A&R Plan does not include a monitoring program. The Board considers that a monitoring program is necessary in order to ensure that the implementation of it will not cause any negative impacts to the environment. This monitoring plan should include both, the monitoring of the sewage Effluent and monitoring of the sewage sludge.

Prior to any discharge, all Effluent from the former sewage lagoon to the receiving environment must be sampled and all samples obtained for analysis must satisfy the requirements set in the Guidelines for the Discharge of Treated Municipal Wastewater in the Northwest Territories⁸.

⁸ Guidelines for the Discharge of Treated Municipal Wastewater in the Northwest Territories, NWT Water Board,

So, the Board has established under Part D, Item 2 of the Licence effluent, quality limits for the controlled discharge of the Old Sewage Lagoon Effluent.

Likewise, representative sludge sampling locations shall be selected and identified on a lagoon layout plan. Samples shall be analyzed for the parameters listed in a known guideline for compost quality such as “the category ‘B’ compost criteria presented in Section 3 of the 2005 CCME Guidelines for Compost Quality” or any other suitable guideline.

In addition, and following final closure of the site, periodic inspection and monitoring post-closure will be required to prevent or mitigate potential environmental impacts generated from the sewage treatment facility site, until regulatory bodies deem the site has reached a point where no long term environmental impacts are likely to occur.

The A&R Plan also proposes the disposal of the sewage sludge into the Landfarm Facility. After reviewing the proposal the Board concludes that it does not authorize the disposal of the Old Sewage Lagoon’s sludge at the landfarm. The Board considers that the A&R Plan for the Old Sewage Lagoon does not provide a valid justification to the proposed addition of the Old Sewage Lagoon’s sludge to the landfarm soils.

A re-consideration to this Board’s decision with respect to the sewage sludge disposal will require the submission of an updated A&R Plan for Board's approval. The Plan to be submitted should include, but not be limited to considerations to sludge quality, northern climate, soils characteristics, application boundaries, application rates and monitoring program.

Furthermore, the NWB recommends the Hamlet consider the practicality of leaving the sludge within the former sewage lagoon and allow it to be remediated at site, or in other words of dewatering the sludge by allowing it to freeze-thaw in place as described in the 2005 FSC Architects & Engineers Report .

Therefore, under Part G Item 1 of the Renewal Water Licence the Board establishes a condition requesting the Licensee to submit an updated Old Sewage Lagoon A&R Plan for Board’s approval.

Monitoring Program

The submitted “*O&M Plan for the Sewage Treatment Facility*” includes under Section 3.72 “*Monitoring Locations*”, a revised Monitoring Program with modifications to the Monitoring Program approved under the previous Licence. On March 23, 2015 the Board submitted a letter to the Hamlet requesting clarification on the status of the additional monitoring stations included in the Plan.

The Hamlet replied to the Board on April 6, 2015⁹. In the letter the Hamlet stated that those additional monitoring stations were no longer active and that the Monitoring Program approved under Part H, Item 1 of the expired Water Licence still applies.

Further to that, the existence and operation of temperature monitoring stations at different depths in four locations of the sewage lagoon dyke was confirmed by the Hamlet in an email dated April 10, 2015.

Therefore, the Water quality / quantity monitoring stations in use are:

- Monitoring Station **KUG-1**: monitoring of the volume of the water withdrawn from Coppermine River;
- Monitoring Station **KUG-2**: monitoring of the effluent quality, outside of the SWDF;
- Monitoring Station **KUG-3**: monitoring of the sewage effluent quality at end-of-pipe at Final Point of Discharge from the Sewage Lagoon to the Wetland Treatment Area (WTA);
- Monitoring Station **KUG-4**: monitoring of the sewage effluent quality at Effluent outfall from the WTA before discharging to Coronation Gulf;
- Monitoring Station **KUG-5**: monitoring of the Landfarm Effluent quality.

Also the Hamlet informed that the GPS coordinates of monitoring stations KUG-1, KUG-2, KUG-3, and KUG-4 were established by AANDC's Inspector in August 2014.

Therefore, under Part H of the Renewal Licence, the Board has decided to maintain the same monitoring stations as that of the expired licence and to add two additional monitoring stations **KUG-6** and **KUG-7**. Monitoring Station KUG-6 is included to monitor the residual Effluent and runoff water quality of the Old Sewage Lagoon. Monitoring Station KUG-7 is included to monitor the temperature at different depths in four different locations of the sewage lagoon dyke.

The Sewage Effluent's Final Discharge Point is set at KUG-3, the Effluent discharge point for the Sewage Lagoon (end of pipe) with the condition to not exceed the Effluent quality limits established under Part D, Item 2. The discharge criterion adheres to the Guidelines for the Discharge of Treated Municipal Wastewater in the Northwest Territories (1992). The Effluent discharge from the Wetland Treatment Area, at Monitoring Station KUG-4 requires also to be monitored to determine the effectiveness of the wetland as supplementary treatment system.

Similarly, the Effluent discharge from the Old Sewage Lagoon at Monitoring Station KUG-6 must satisfy before discharge the requirements set in the Guidelines for the Discharge of Treated Municipal Wastewater in the Northwest Territories (1992) established under Part D, Item 2 of the Renewal Water Licence.

⁹ Letter from S. Alam to NWB Ref: Kugluktuk Water Licence 3BM-KUG0914 – Clarification Addendum, on April 6, 2015

Furthermore, the Board has included conditions under Part H Items 1, 14 and 15 which request the Licensee to monitor temperatures at Monitoring Station KUG-7 and to provide an evaluation of the thermal data in the Annual Report.

Regarding the Landfarm Facility, prior to any discharge all Effluent (leachate and/or runoff) from the Landfarm Facility to the receiving environment at Monitoring Station KUG-5 must be sampled and all samples obtained for analysis should be evaluated using the CCME Water Quality Guidelines for the protection of aquatic life in freshwater. Accordingly, the Board has established under Part D, Item 6 of the Renewal Water Licence effluent quality limits for the controlled discharge of Landfarm Facility Effluent.

Furthermore and although landfarming is recommended for petroleum hydrocarbon contaminated soils only, it is understood that other contaminants may also be present; this fact should be considered when monitoring the landfarm Effluent (runoff and/or leachate) as well as landfarm soils. Therefore, a Licence condition requesting the analysis of additional parameters is established under Part H Item 8.

Finally, under Part H, Item 11, the Board has reaffirmed the requirement for the Licensee to submit a QA/QC Plan, with a confirmation letter from a certified lab regarding the plan's acceptability, for the Board's review within ninety (90) days following the issuance of the Licence.



NUNAVUT WATER BOARD WATER LICENCE RENEWAL

Licence No. **3BM-KUG1520**

Pursuant to the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada*, the Nunavut Water Board, hereinafter referred to as the Board, hereby grants to the

HAMLET OF KUGLUKTUK

(Licensee)

P.O BOX 271, KUGLUKTUK, NUNAVUT, X0B 0E0

(Mailing Address)

hereinafter called the Licensee, the right to alter, divert or otherwise use Water or dispose of Waste for a period subject to restrictions and conditions contained within this Licence renewal:

Licence Number/Type: 3BM-KUG1520, TYPE "B"

Water Management Area: AMUNDSEN GULF WATERSHED (27)

Location: KUGLUKTUK
KITIKMEOT REGION, NUNAVUT

Classification: MUNICIPAL UNDERTAKING

Purpose: DIRECT WATER USE AND DEPOSIT OF WASTE

Quantity of Water use not to Exceed: 299 CUBIC METRES *PER* DAY TO A MAXIMUM OF
77,000 CUBIC METRES *PER* ANNUM

Date of Licence Issuance: December 8, 2015

Expiry of Licence: December 7, 2020

This Licence renewal issued and recorded at Gjoa Haven, Nunavut includes and is subject to the annexed conditions.

Thomas Kabloona,
Nunavut Water Board, Chair

PART A: SCOPE, DEFINITIONS AND ENFORCEMENT

1. Scope

This Licence allows for the use of Water and the deposit of Waste for a Municipal undertaking classified as per Schedule 1 of the *Regulations*, at the Hamlet of Kugluktuk, located in the Kitikmeot Region, Nunavut (Latitude: 67° 49' 32"N and Longitude: 115° 05' 42"W).

- a. This Licence is issued subject to the conditions contained herein with respect to the taking of Water and the depositing of Waste of any type in any Waters or in any place under any conditions where such Waste or any other Waste that results from the deposits of such Waste may enter any Waters. Whenever new Regulations are made or existing *Regulations* are amended by the Governor in Council under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*, or other statutes imposing more stringent conditions relating to the quantity or type of Waste that may be so deposited or under which any such Waste may be so deposited, this Licence shall be deemed, upon promulgation of such Regulations, to be subject to such requirements; and
- b. Compliance with the terms and conditions of this Licence does not absolve the Licensee from responsibility for compliance with the requirements of all applicable Federal, Territorial and Municipal legislation.

2. Definitions

“Act” means the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*;

“Addendum” means the supplemental text that is added to a full plan or report usually included at the end of the document and is not intended to require a full resubmission of the revised report;

“Amendment” means a change to original terms and conditions of this Licence requiring correction, addition or deletion of specific terms and conditions of the Licence; modifications inconsistent with the terms of the set terms and conditions of the Licence;

“Appurtenant Undertaking” means an undertaking in relation to which a use of Water or a deposit of Waste is permitted by a licence issued by the Board;

“Board” means the Nunavut Water Board established under the *Nunavut Land Claims Agreement* and the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*;

“Dam Safety Guidelines” means the *Canadian Dam Association (CDA) Dam Safety Guidelines (DSG)*, January 1999 or subsequent approved editions;

“Effluent” means treated or untreated liquid Waste material that is discharged into the

environment from a structure such as a settling pond, landfarm or a treatment plant;

“Engineer” means a professional engineer registered to practice in Nunavut in accordance with the *Consolidation of Engineers and Geoscientists Act S. Nu 2008, c.2* and the *Engineering and Geoscience Professions Act S.N.W.T. 2006, c.16 Amended by S.N.W.T. 2009, c.12*;

“Final Discharge Point” means an identifiable discharge point of a Waste Disposal Facility beyond which the Licensee no longer exercises care and control over the quality of the Effluent, identified as Monitoring Program Station KUG-3 for the sewage Effluent in the Licence;

“Freeboard” means the vertical distance between Water line and crest on a dam or dyke's upstream slope;

“Geotechnical Engineer” means a professional engineer registered with the Association of Professional Engineers, Geologist and Geophysicists of Nunavut and whose principal field of specialization with the engineering properties of earth materials in dealing with man-made structures and earthworks that will be built on a site. These can include shallow and deep foundations, retaining walls, dams, and embankments;

“Grab Sample” means an undiluted quantity of material collected at a particular time and place that may be representative of the total substance being sampled at the time and place it was collected;

“Greywater” means all liquid Wastes from showers, baths, sinks, kitchens and domestic washing facilities, but does not include toilet Wastes;

“Hazardous Waste” means Waste classified as “hazardous” by Nunavut Territorial or Federal legislation, or as “dangerous goods” under the *Transportation of Dangerous Goods Act*;

“High Water Mark” means the usual or average level to which a body of Water rises at its highest point and remains for sufficient time so as to change the characteristics of the land (ref. Department of Fisheries and Oceans Canada, Operational Statement: Mineral Exploration Activities);

“Impermeable Barrier” means a secondary storage tank wall, synthetic membrane liner or other equivalent material;

“Inspector” means an Inspector designated by the Minister under Section 85 (1) of the *Act*;

“Landfarm Facility” means an area designed to biologically treat Type B soils and sewage sludge and comprising the ‘Land Farming Area’ and associated structures, identified as the “land farming area” on Nuna Burnside Project No. N-O 09755.0

Drawing No.1, “*The Hamlet of Nunavut Kugluktuk, Solid Waste Disposal Facility Improvements*” record drawing dated November 18, 2008;

“**Licensee**” means the holder of this Licence;

“**Minister**” means the Minister of Indigenous and Northern Affairs Canada (INAC);

“**Modification**” means an alteration to a physical work that introduces a new structure or eliminates an existing structure and does not alter the purpose or function of the work, but does not include an expansion;

“**Monitoring Program**” means a monitoring program established to collect data on surface Water and groundwater quality to assess impacts to the freshwater aquatic environment of an appurtenant undertaking;

“**Nunavut Land Claims Agreement (NLCA)**” means the “*Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada*”, including its preamble and schedules, and any amendments to that agreement made pursuant to it;

“**Old Sewage Lagoon or Decommissioned Sewage Disposal Facility**” comprises the old lagoon and related infrastructure constructed in 2003 which has not been used since 2009;

“**Regulations**” means the *Nunavut Waters Regulations SOR/2013-69 18th April, 2013*;

“**Secondary Containment**” means an impermeable barrier which prevents unplanned spills from the primary storage tank system;

“**Sewage**” means all toilet Wastes and greywater;

“**Sewage Disposal Facility**” comprises the new ‘Sewage Lagoon’ as identified on the Nuna Burnside Project No. N-O 09755.0 construction Drawing No.2, “*The Hamlet of Kugluktuk, Sewage Lagoon Plan*”, stamped and signed June 18, 2007 and Drawing No.4 “*Sewage Lagoon Details*”, record drawing dated November 18, 2008;

“**Sewage Sludge**” means the semi-solid sewage material which settles at the bottom of the Sewage Lagoon;

“**Solid Waste Disposal Facility**” means the facilities designated for the disposal of solid waste, and consists of four main components: a Landfill, the Bulky Material Disposal Area, Landfarm Facility and Hazardous Waste Storage Area as identified on Nuna Burnside Project No. N-O 09755.0 Drawing No.1, “*The Hamlet of Nunavut Kugluktuk, Solid Waste Disposal Facility Improvements*”, record drawing dated November 18, 2008;

“Spill Contingency Plan” means a Plan developed to deal with unforeseen petroleum and hazardous materials events that may occur during the operations conducted under the Licence. A Spill Contingency Plan should follow a format similar to that found in *Guidelines for Spill Contingency Planning* (AANDC 2007);

“Toilet Wastes” means all human excreta and associated products, but does not include greywater;

“Treatment Objective” means the treatment objective for the Landfarm Facility which is based on the Canadian Council of Ministers of the Environment (CCME), 2001 *Canada – Wide Standard for Petroleum Hydrocarbon in Soil, for Industrial Land Use*; or as determined by the Government of Nunavut, Environmental Protection Service based on the 2002 *Environmental Guideline for Site Remediation*;

“Type A Soil” means soil contaminated with hydrocarbons in which the primary petroleum product present in the soil as determined by laboratory analysis consists of lubricating oil and grease;

“Type B Soil” means soil contaminated with hydrocarbons in which the primary petroleum product present in the soil as determined by laboratory analysis consists of fuel oil and/or diesel fuel and /or gasoline;

“Water Supply Facility” means the modified Water Supply Facility which comprises the Phase I, upgraded Water Intake System and the Phase II, the proposed upgrade of the Water Treatment Plant which includes an off-stream storage of 266,000 L of Water or pf 356,000 L including Water reserved for fire, as described in the Application for Water Licence Renewal filed by the Applicant on March 19, 2014, and also described in the reports entitled: *“Design Development Report : Phase 1- Intake and Pumphouse Replacement”*, Project: Water System Improvement, prepared by Williams Engineering Inc., dated December 2008 and *“Process Selection Report Project: Phase 2 – Water Treatment”*, prepared by Williams Engineering Canada Inc., dated September 2011;

“Waste” means, as defined in S.4 of the *Act*, any substance that, by itself or in combination with other substances found in Water, would have the effect of altering the quality of any Water to which the substance is added to an extent that is detrimental to its use by people or by any animal, fish or plant, or any Water that would have that effect because of the quantity or concentration of the substances contained in it or because it has been treated or changed, by heat or other means;

“Waste Disposal Facilities” means all facilities designated for the disposal of Waste, and includes the Sewage Disposal Facilities and Solid Waste Disposal Facilities (including the landfill, bulk metal, Hazardous Waste and Landfarm Facility areas), as described in the Application for Water Licence renewal filed by the Applicant on March 19, 2014;

“Water” or “Waters” means Waters as defined in section 4 of the *Act*;

“Water Retention Area” comprises the ‘Water Retention Area’ as identified on Nuna Burnside Project No. N-O 09755.0 Drawing No.1,” *The Hamlet of Kugluktuk, Solid Waste Disposal Facility Improvements*”, record drawing dated November 18, 2008;

“Wetland Treatment Area” comprises the ‘Expanded Wetland Treatment Area’ as identified on Nuna Burnside Project No. N-O 09755.0 Drawing No.2, “*The Hamlet of Kugluktuk Sewage Lagoon Plan*” and the “*Meandering Wetland Treatment Area*” as identified on Drawing No.3, *The Hamlet of Nunavut Kugluktuk Proposed Sewage Lagoon Sections* stamped and dated June 18, 2007.

3. Enforcement

- a. Failure to comply with this Licence will be a violation of the *Act*, subjecting the Licensee to the enforcement measures and the penalties provided for in the *Act*;
- b. All inspection and enforcement services regarding this Licence will be provided by Inspectors appointed under the *Act*; and
- c. For the purpose of enforcing this Licence and with respect to the use of Water and deposit or discharge of Waste by the Licensee, Inspectors appointed under the *Act*, hold all powers, privileges and protections that are conferred upon them by the *Act* or by other applicable law.

PART B: GENERAL CONDITIONS

1. The Licensee shall file an Annual Report on the Appurtenant Undertaking with the Board no later than 31st of March of the year following the calendar year being reported, containing the following information:
 - a. tabular summaries of all data generated under the “Monitoring Program” as described under Part H
 - b. the daily, monthly, and annual quantities, in cubic metres, of freshwater obtained from Monitoring Station KUG-1;
 - c. the daily, monthly and annual quantities in cubic metres of sewage effluent discharged at Monitoring Station KUG-3;
 - d. the monthly and yearly quantities of authorized Waste – bulky metal, hazardous, wood and soil—accepted at the Solid Waste Facilities;
 - e. a summary of modifications and/or major maintenance work carried out on the Water Supply and Waste Disposal Facilities, including all associated structures and facilities;
 - f. a list of unauthorized discharges and summary of follow-up action taken;
 - g. a summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year, including a summary of the Old Sewage Lagoon (Decommissioned Sewage Disposal Facility) Facility’s Inspection Report in accordance with Part G, Item 1;
 - h. any updates or revisions for manuals and plans (*Including Operations and*

Maintenance Plans, Spill Contingency, Abandonment and Restoration, QA/QC Plans) as required by changes in operation and/or technology;

- i. a summary of any studies, reports and plans requested by the Board that relate to Water use, Waste disposal or reclamation, and a brief description of any future studies planned;
 - j. summary of any inspections completed by federal or territorial authorities, geotechnical or municipal engineers, on undertakings related to Water use, Waste disposal or reclamation activities; and
 - k. any other details on Water use or Waste disposal requested by the Board by November 1st of the year being reported.
2. The Licensee shall notify the NWB of any changes in operating plans or conditions associated with this project at least thirty (30) days prior to any such change.
 3. The Licensee shall comply with the “Monitoring Program” described in this Licence, and any amendments to the “Monitoring Program” as may be made from time to time, pursuant to the conditions of this Licence.
 4. The “Monitoring Program” and compliance dates specified in the Licence may be modified at the discretion of the Board.
 5. The Licensee shall install flow meters or other such devices, or implement suitable methods required for the measuring of Water volumes as required under Part H, Item 1.
 6. The Licensee shall, post the necessary signs, to identify the stations of the “Monitoring Program”. All signage shall be in the Official Languages of Nunavut.
 7. The Licensee shall, for all Plans submitted under this Licence, include a proposed timetable for implementation. Plans submitted, cannot be undertaken without subsequent written Board approval and/or direction. The Board or an Inspector may alter or modify a Plan if necessary to achieve legislative objectives and will notify the Licensee in writing of acceptance, rejection or alteration of the Plan.
 8. The Licensee shall, for all Plans submitted under this Licence, implement the Plan as approved by the Board in writing.
 9. The Licensee shall review the Plans referred to in this Licence, as required by changes in operation and/or technology, and modify the Plan accordingly. Revisions to the Plans shall be submitted in the form of an Addendum to be included with the Annual Report.
 10. Every Plan to be carried out pursuant to the terms and conditions of this Licence shall become a part of this Licence, and any additional terms and conditions imposed upon approval of a Plan by the Board become part of this Licence. All terms and conditions of the Licence should be contemplated in the development of a Plan where appropriate.
 11. The Licensee shall ensure a copy of this Licence is maintained at the site of operations at

all times. Any communication with respect to this Licence shall be made in writing to the attention of:

(a) Manager of Licensing:

Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1J0
Telephone: (867) 360-6338
Fax: (867) 360-6369
Email: licensing@nwb-oen.ca

(b) Inspector Contact:

Manager of Field Operations, AANDC
Nunavut District, Nunavut Region
P.O. Box 100
Iqaluit, NU X0A 0H0
Telephone: (867) 975-4295
Fax: (867) 979-6445

12. The Licensee shall submit one paper copy and one electronic copy of all reports, studies, and plans to the Board. Reports or studies submitted to the Board by the Licensee shall include a detailed executive summary in Inuktitut.
13. The Licensee shall ensure that any document(s) or correspondence submitted by the Licensee to the NWB is received and acknowledged by the Manager of Licensing.
14. This Licence is assignable as provided for in Section 44 of the *Act*.
15. The expiry or cancellation of this Licence does not relieve the Licensee from any obligation imposed by the Licence, or any other regulatory requirement.

PART C: CONDITIONS APPLYING TO WATER USE

1. The Licensee shall obtain all freshwater for municipal purposes from the Coppermine River, as indicated in its Application.
2. The annual quantity of Water withdrawn for all purposes under Part C, Item 1 in this Licence shall not exceed seventy thousand (70,000) cubic metres *per year* at a maximum withdrawal rate of two-hundred and ninety-nine (299) cubic metres *per day*.
3. The Licensee shall equip all Water intake hoses with a screen of appropriate mesh size to ensure that fish are not entrained and shall withdraw Water at a rate such that fish do not become impinged on the screen.
4. Where the use of Water is of a sufficient volume that the source Water body may be drawn down, the Licensee shall submit to the Board for approval in writing, the

following:

- a. details of Water volume involved;
 - b. hydrological overview of the Water body;
 - c. details of impacts; and
 - d. proposed mitigation measures.
5. The Licensee shall maintain the Water Supply Facility to the satisfaction of the Inspector.
 6. The Licensee shall not remove any material from below the ordinary High Water Mark of any Water body unless approved by the Board in writing.
 7. The Licensee shall not cause erosion to the banks of any body of Water and shall provide necessary controls to prevent such erosion.
 8. The Licensee shall implement sediment and erosion control measures prior to and maintain as required during Hamlet operations, to prevent entry of sediment into Water.

PART D: CONDITIONS APPLYING TO WASTE DISPOSAL

1. The Licensee shall direct all Sewage to the Sewage Disposal Facility or as otherwise approved by the Board.
2. All Effluent discharged from the Sewage Disposal Facility at the Final Discharge Point at Monitoring Program Station KUG-3 end-of-pipe to the Wetland Treatment Area, shall not exceed the following Effluent quality limits:

| Parameter | Maximum Concentration of any Grab Sample |
|------------------------|---|
| BOD ₅ | 120 mg/L |
| Total Suspended Solids | 180 mg/L |
| Faecal Coliforms | 1 x 10 ⁶ CFU/100 mL |
| Oil and grease | No visible sheen |
| pH | Between 6 and 9 |

3. All Effluent discharged from the Old Sewage Lagoon, Monitoring Station KUG-6 shall not exceed the Effluent quality limits set under Part D, Item 2.
4. The Licensee shall maintain at all times a Freeboard limit of at least 1.0 metre, or as recommended by a qualified Geotechnical Engineer and as approved by the Board in writing, for all dams, dykes, or structures intended to contain, withhold, divert or retain Water or Waste.
5. The Sewage Disposal Facility shall be maintained and operated, to the satisfaction of an Inspector and in such a manner as to prevent structural failure.

6. All discharge of Effluent at Monitoring Program Station KUG-5, from within the perimeter of the Landfarm Facility, shall not exceed the following Effluent quality limits:

| Parameter | Maximum Concentration of any Grab Sample (µg/L) |
|------------------|---|
| pH | 6 to 9 (units) |
| Oil and Grease | 5,000 and no visible sheen |
| TSS | 15,000 |
| Lead (dissolved) | 1 |
| Phenols | 20 |
| Benzene | 370 |
| Toluene | 2 |
| Ethylbenzene | 90 |

7. The Licensee shall provide at least ten (10) days' notice to an Inspector, of the intent to discharge Effluent from the Old Sewage Disposal Facility or the Landfarm Facility.
8. The Effluent under Part D, Item 7 shall be discharged at a minimum distance of thirty-one (31) metres from the ordinary High Water Mark of any water body and where direct or indirect flow into a water body is not possible and no additional impacts are created.
9. The Licensee shall, prior to the removal of any treated soil for future use, confirm with the Government of Nunavut, Environmental Protection Service that the soils have been treated to meet all legislatively-required Treatment Objectives for its intended use.
10. The Licensee shall dispose of all Solid Wastes in such a manner as to prevent the deposition of such waste in to water.
11. The Licensee shall not open burn plastics, wood treated with preservatives, electric wire, Styrofoam, asbestos or painted wood to prevent the deposition of Waste materials of incomplete combustion and/or leachate from contaminated ash residual, from impacting any surrounding Waters, unless otherwise approved by the Board in writing.
12. The Licensee shall segregate and store all hazardous materials and/or Hazardous Waste in such a manner as to prevent the deposit of Waste into Water, until such time that the material have been removed for proper disposal at an approved facility.

PART E: CONDITIONS APPLYING TO MODIFICATIONS AND CONSTRUCTION

1. The Board has, with the issuance of this Licence, approved the amendment to the Water Supply Facility.
2. The Licensee shall submit to the Board for approval in writing, for-construction design drawings, stamped and signed by a qualified Engineer registered in Nunavut, at least sixty (60) days prior to the construction of any dams, dykes or structures intended to

contain, withhold, divert or retain Water or Wastes.

3. The Licensee may, without written consent from the Board, carry out Modifications to the Water Supply Facility and Waste Disposal Facilities provided that such Modifications are consistent with the conditions and scope of this Licence and the following requirements are met:
 - a. the Licensee has notified the Board in writing of such proposed Modifications at least sixty (60) days prior to beginning the Modifications;
 - b. such Modifications do not place the Licensee in contravention of the Licence or the *Act*;
 - c. the Board has not, during the sixty (60) days following notification of the proposed Modifications, informed the Licensee that review of the proposal will require more than sixty (60) days; and
 - d. the Board has not rejected the proposed Modifications.
4. The Modifications for which all of the conditions referred to in Part E, Item 3, have not been met, may only be carried out upon written approval from the Board.
5. The Licensee shall, within ninety (90) days of completion of Modification or Construction of facilities and/or infrastructure associated with the project, submit to the Board a Construction Summary Report along with stamped as-built plans and drawings, providing explanation to reflect any deviations from the for construction drawings, taking into account construction and field decisions and how they may affect the performance of engineered facilities.
6. The Licensee shall submit to the Board for approval in writing, at least sixty (60) days prior to the construction of the new Water Treatment Plant (WTP), for-construction design drawings of the new WTP, stamped and signed by a qualified Engineer.
7. The Licensee shall within ninety (90) days of completion of modifications of the Water Supply Facility, submit to the Board for review and written acceptance a Construction Summary Report along with as-built plans and drawings of the new Water Intake Facility and the new Water Treatment Plant, stamped and signed by a qualified Engineer.
8. All activities shall be conducted in such a way as to minimize impacts on surface drainage and the Licensee shall immediately undertake any corrective measures in the event of any impacts on surface drainage.
9. The Licensee shall implement and maintain sediment and erosion control measures prior to and during activities carried out under this Part, to prevent negative impacts to Water resulting from the release of sediment and to minimize erosion.
10. With respect to earthworks, the Licensee shall not deposit debris or sediment into or onto any Water body. These materials shall be disposed of at a distance of at least thirty-one (31) metres from the ordinary High Water Mark in such a fashion that they do not enter

the Water.

11. The Licensee shall only use material that is free of contaminants, for construction, operation, and maintenance activities and that is obtained from approved sources, demonstrated not to be potentially acid generating and metal leaching.

PART F: CONDITIONS APPLYING TO OPERATION AND MAINTENANCE

1. The Licensee shall submit to the Board for approval in writing, within ninety (90) days of issuance of the Licence, an updated Sewage Treatment Facility Operation and Maintenance Manual. The updated Manual shall include:
 - a. a Monitoring Program, which reflects the current operating and monitoring conditions of the Licenced Facilities;
 - b. the Temperature Monitoring Program for the Sewage Lagoon Dyke; and
 - c. the GPS coordinates of the Monitoring Stations.
2. The Board has approved the “Spill Contingency Plan” (SCP), dated November 28, 2014, which was submitted as additional information with the Application. The Licensee shall submit to the Board for review within ninety (90) day of the date of Licence issuance an addendum to the SCP to include:
 - a. a detailed description of the secondary containment used as spill prevention measure during fuel or hazardous substance transfer at the Licenced Facilities.
3. The Licensee shall submit to the Board for approval in writing, within ninety (90) days of issuance of the Licence, an updated Solid Waste Facility Operation and Maintenance Plan prepared in accordance with the “Guidelines for the Preparation of an Operation and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories” (1996). The updated Plan shall take into consideration the comments received during the renewal application review process for expired Licence No. 3BM-KUG0914 including the following information:
 - a. SWF Monitoring Plan: updated sampling locations, parameters and timing required
 - b. a plan for the inspection, management and monitoring for the sewage sludge, which also identifies the remediation objectives for sewage sludge treated in the Landfarm Facility
4. The Licensee shall submit to the Board for approval in writing, within ninety (90) days of beginning operations, a Water Supply Facility (WSF) Operation and Maintenance Manual. The WSF Operation and Maintenance Manual should include an Operations and Maintenance Manual for the updated Water Treatment Facility and also include the “Kugluktuk Water Intake Operations and Maintenance (O&M) Manual” dated October 2014 and submitted as additional information with the Application.

5. An inspection of all engineered facilities related to the management of Water and Waste shall be carried out by an Engineer at a minimum of once annually, and before commissioning any engineered facility related to the management of Water and Waste. The Engineer's report shall be submitted to the Board within sixty (60) days of the inspection, including a cover letter from the Licensee outlining an implementation plan to address each of the Engineer's recommendations.
6. An inspection of all engineered facilities related to the management of Water and Waste shall be conducted by a Geotechnical Engineer in accordance with the *Canadian Dam Safety Guidelines*, at least one (1) year prior to the expiry of the Licence, during the open Water period (June/July/August). The Geotechnical Engineer's report shall be submitted to the Board for review within sixty (60) days of the inspection, including a cover letter from the Licensee outlining an implementation plan to address the Engineer's recommendations.
7. The Licensee shall perform more frequent inspections of the engineered facilities at the request of an Inspector.
8. If during the period of this Licence, an unauthorized discharge of Waste occurs, or if such a discharge is foreseeable, subject to the Act and the Nunavut adopted *Consolidated Spill Contingency Planning and Reporting Regulations* (R- 068-93), the Licensee shall:
 - a. employ the appropriately approved Spill Contingency Plan for the Hamlet of Kugluktuk. Take whatever steps are immediately practicable to protect human life, health and the environment;
 - b. report the incident immediately via the NWT/NU 24-Hour Spill Reporting Line at (867) 920-8130 and to the AANDC Manager of Field Operations at (867) 975-4295; and
 - c. for each spill occurrence, submit to the Inspector not later than thirty (30) days after initially reporting the event, a detailed report that provides the necessary information on the location (including the GPS coordinates), amount and type of spilled product, initial response action, remediation/clean-up, status of response (ongoing, complete), proposed disposal options for dealing with contaminated materials and any preventative measures to be implemented.
9. The Licensee shall, in addition to Part F, Item 9, regardless of the quantity of releases of harmful substances, report to the NWT/NU Spill Line if the release is near or into a Water body.

PART G: CONDITIONS APPLYING TO ABANDONMENT AND RESTORATION

1. The Licensee shall submit to the Board for approval in writing, within ninety (90) days following the date of issuance of this Licence, an updated Abandonment and Restoration Plan for the Old Sewage Lagoon. The Plan shall include, but not be limited to:
 - a. an implementation schedule for the Plan;

- b. sludge treatment method and disposal options;
 - c. Effluent treatment and disposal;
 - d. Monitoring Program; and
 - e. Schedule of inspection and checklist.
2. The Licensee shall submit to the Board, for approval, an Abandonment and Restoration Plan, at least six (6) months prior to abandoning any facilities or upon submission of the final design drawings for the construction of new facilities to replace existing ones. Where applicable, the Plan shall include information on the following:
- a. Water intake facilities;
 - b. the Water treatment and Waste disposal sites and facilities;
 - c. abandoned Water and Waste facilities;
 - d. petroleum and chemical storage areas;
 - e. any site affected by Waste spills;
 - f. leachate prevention;
 - g. an implementation schedule;
 - h. maps delineating site facilities;
 - i. consideration of altered drainage patterns;
 - j. type and source of cover materials;
 - k. future area use;
 - l. Hazardous Wastes; and
 - m. a proposal identifying measures by which restoration costs will be financed by the Licensee upon abandonment related to Water use, Waste deposit to Water, or appurtenant undertakings related to Water use and/or deposit of Waste to Water, subject to the act and regulations.
3. The Licensee shall complete all restoration work within the time schedule specified in the Plan, or as subsequently revised and approved by the Board.
4. The Licensee shall carry out progressive reclamation of any components of the project no longer required for the Licensee's operations.
5. In order to promote growth of vegetation and the needed microclimate for seed deposition, all disturbed surfaces shall be prepared by ripping, grading, or scarifying the surface to conform to the natural topography.
6. Areas that have been contaminated by hydrocarbons shall be reclaimed to meet objectives as outlined in the Government of Nunavut's *Environmental Guideline for Site Remediation* (Revised January 2009). The use of reclaimed soils for the purpose of back fill or general site grading may be carried out only upon consultation and approval by the Government of Nunavut, Department of Environment and an Inspector.

PART H: CONDITIONS APPLYING TO THE MONITORING PROGRAM

1. The Licensee shall maintain Monitoring Program Stations at the following locations:

| Monitoring Program Station Identification | Description | Status |
|--|--|--------------------------|
| KUG-1 | Raw Water Supply Intake at Coppermine River | Active (Volume) |
| KUG-2 | Effluent discharge from the Water Retention Area in the Solid Waste Disposal Facilities | Active (Quality) |
| KUG-3 | Effluent discharge end-of-pipe at Final Discharge Point from the Sewage Lagoon to the Wetland Treatment Area | Active (Quality) |
| KUG-4 | Outfall area for the Wetland Treatment Area | Active (Quality) |
| KUG-5 | Effluent discharge and run-off from the Landfarm Facility (controlled discharge) | Active (Quality) |
| KUG-6 | Effluent discharge (controlled discharge) from the Old Sewage Lagoon | New/Active (Quality) |
| KUG-7 | Thermistor readings in accordance with approved Temperature Monitoring Program for the Sewage Lagoon Dyke under Part F Item 2b | New/Active (Temperature) |

2. The Licensee shall measure and record, in cubic metres, the daily, monthly, and annual quantities of Water extracted for all purposes at Monitoring Program Station KUG-1.
3. The Licensee shall sample monthly at Monitoring Program Station KUG-2, KUG-3 and KUG-4 during periods of observed flow and annual discharges.
4. All Samples obtained at KUG-2, KUG-3, KUG-4 and KUG-6 shall be analyzed for the following parameters:

Biological Oxygen Demand (BOD₅)
pH
Total Suspended Solids
Nitrate-Nitrite
Chloride
Sodium
Magnesium
Total Hardness

Fecal Coliforms
Conductivity
Oil and Grease (visual)
Ammonia Nitrogen
Sulphate
Potassium
Calcium
Total Alkalinity

Total Arsenic
Total Cadmium
Total Cobalt
Total Copper
Total Lead
Total Mercury
Total Zinc
Total Phenols

Total Aluminum
Total Chromium
Total Iron
Total Manganese
Total Nickel
Carbonaceous Biochemical
Oxygen Demand (CBOD)

5. The Licensee shall sample monthly at Monitoring Program Station KUG-3, during periods of observed flow and annual discharges to verify compliance with effluent quality criteria under Part D Item 2.
6. The Licensee shall carry out inspections at Monitoring Program Stations KUG-2, KUG-3 and KUG-4, weekly from May to October inclusive, to determine Effluent or water flow in order to fulfill the monitoring requirements of Part H, Item 4 and 5. A record of inspections shall be retained and made available to an Inspector upon request.
7. The Licensee shall sample prior to discharge at Monitoring Program Station KUG-5, to verify compliance with Effluent quality criteria under Part D, Item 6.
8. All samples obtained at KUG-5 shall be analyzed for the following parameters:

pH
Total Suspended Solids
Total Hardness
Oil and Grease (visual)
Total Petroleum Hydrocarbons (TPH)
Polycyclic Aromatic Hydrocarbons (PAH)
BTEX:
Benzene
Toluene
Ethylbenzene
Xylene

Conductivity
Total Copper
Total Mercury
Total Zinc
Total Chromium
Total Lead
Nickel
Total Arsenic
Total Cadmium
PCB (Polychlorinated biphenyls)

9. The Licensee shall sample prior to discharge at Monitoring Program Station KUG-6, to verify compliance with Effluent quality criteria under Part D, Item 2.
10. Additional monitoring stations, sampling and analysis may be requested by an Inspector.
11. The Licensee shall submit to the Board for review, within ninety (90) days of the date of issuance of the Licence, a Quality Assurance/Quality Control Plan based on the guidance document entitled *Quality Assurance (QA) and Quality Control (QC) Guidelines For Use by Class "B" Licences in Collecting Representative Water Samples in the Field and for Submission of a QAQC Plan* INAC (1996). The submitted Plan shall include a cover letter from an accredited laboratory confirming acceptance of the Plan for the monitoring

and analyses to be performed under the Licence.

12. The Licensee shall conduct all sampling, sample preservation and analyses in accordance with methods prescribed in the current edition of *Standard Methods for the Examination of Water and Wastewater*, or by such other methods approved by a laboratory certified by the Canadian Association for Laboratory Accreditation (CALA) or otherwise approved by the Board.
13. All analyses shall be performed in a laboratory accredited according to ISO/IEC Standard 17025. The accreditation shall be current and in good standing.
14. The Licensee shall monitor temperature at Monitoring Station(s) KUG-7 a minimum of twice annually, in early spring and mid to late fall or in accordance with the Sewage Lagoon Dyke Monitoring Program requested under Part F, Item 1b and 1c.
15. The Licensee shall provide the temperature readings at different depths at Monitoring Station(s) KUG-7 within the annual report, due no later than March 31. An annual evaluation of the geothermal data of the Sewage Disposal Facility shall be provided as an addendum to the Annual Report.
16. The Licensee shall include all of the data and information of the Monitoring Program, as required under Part B, Item 1(a), or as requested by an Inspector.
17. Modifications to the Monitoring Program including the Monitoring Program Stations and parameters may be made only upon written approval of the Board.